



# Pediatric Academic Societies Meeting

April 24 – May 1, 2019 | Baltimore, MD

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Infants exclusively fed human donor milk require supplementation with vitamin C (Board 396)

Mon,  
April 29

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Session

Part of:

**3845 Breastfeeding/Human Milk: Donor Human Milk**

Info

## Background:

Aside from vitamin D, mother's milk is a complete source of nutrition for term infants for the first 6 months. When mother's milk is unavailable for the preterm infant, pasteurized human donor milk (DM) with appropriate fortification is recommended. There is growing interest in feeding DM to the term infant when mother's milk is unavailable; however, it is not known whether vitamin supplementation is required, especially for heat and light sensitive nutrients susceptible to loss by processing. Vitamin C is a water-soluble nutrient required for bone and cartilage growth, immune system function and neurotransmitter synthesis. The recommended adequate intake for term infants is 40 mg/day from 0-6 months.

## Objective:

The primary objective of this study was to determine the vitamin C concentration in pooled pasteurized DM. The secondary objective was to estimate the vitamin C intake of term infants consuming unfortified DM as a sole source of nutrition.

## Design/Methods:

## Scientific Content Overview

### Code of Conduct

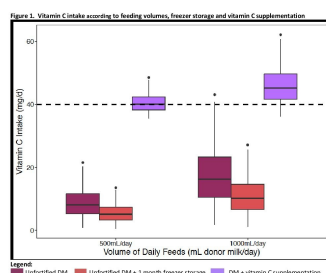
Samples of DM were collected (n=56 batches, pooled milk of 3-4 donors/batch) from Apr to Aug 2018 from the Rogers Hixon Ontario Human Milk Bank. Total vitamin C content of DM samples was quantified using high performance liquid chromatography (standard curve generated with L-ascorbic acid). Vitamin C intake was estimated assuming exclusive feeding of unfortified DM of 500 and 1000 ml, typical daily milk intakes for term infants at 1 month and 6 months, respectively, and modelled to account for vitamin C retention after 1 month of freezer storage (63±29%, Buss et al, 2001).

### Results:

Vitamin C in DM was variable with a mean ±standard deviation of 17.7 ±9.8 mg/L (range 1.85-43.2 mg/L) thereby giving a total daily intake of 8.8 ±4.9 to 17.7 ±11.1 mg assuming exclusive unfortified DM feeds of 500 ml to 1000 ml, respectively (Figure 1). If DM was consumed after 1 month of freezer storage at -20°C, the vitamin C intake is estimated to be 5.6 ±3.0 (500 ml) to 11.1 ±6.15 mg (1000 ml) daily. Infants provided with 35 mg daily of supplemental vitamin C would not meet their daily requirement for vitamin C with all batches of DM when consuming DM at 500 ml/day. However, it would be a sufficient vitamin C daily intake with a DM feeding volume of 1000 ml/day.

### Conclusion(s):

If DM is provided as an exclusive source of nutrition for the term infant, vitamin C supplementation should be provided. Other heat and light sensitive nutrients in human DM should similarly be investigated. (Funding CIHR Foundation Grant #: 143233)



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